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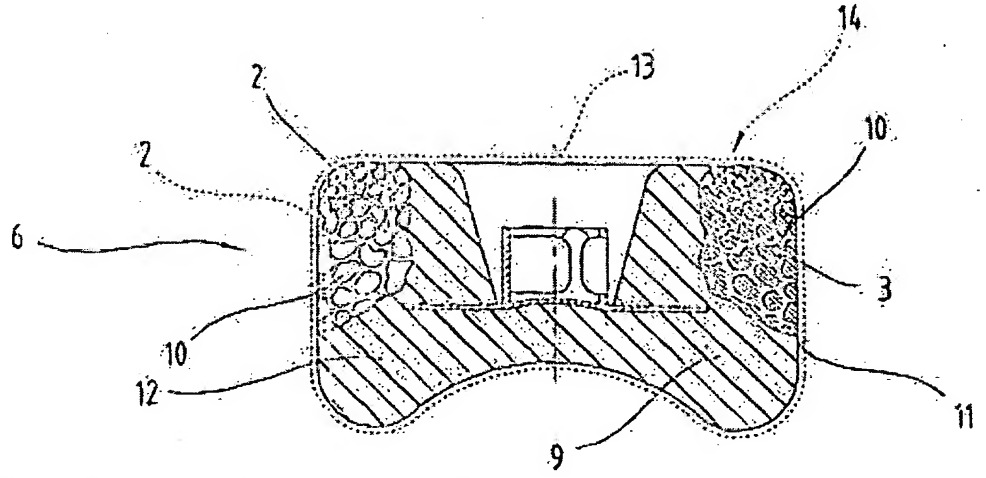
(54) Title: USE OF POLYETHYLENE GLYCOL-9 NONYL PHENYL ETHER



(57) Abstract
This invention relates to the use of polyethylene glycol-9 nonyl phenyl ether (3) in liquid form to produce a long-lasting wetting and/or coating of the mucus membranes of a reproductive organ to produce a chemical coating thereon or for wetting and/or coating and/or filling a vaginally insertable sponge vehicle (6) as a contraceptive and virustatic agent for the vaginal mucosa.

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Use of Polyethylene Glycol-9 Nonyl Phenyl Ether

This invention describes the use of polyethylene glycol-9 nonyl phenyl ether.

It is already known (Lexikon der Hilfstoffe für Pharmazie, Kosmetik und angrenzende Gebiete [Lexicon of Additives and Excipients For Pharmacy, Cosmetics and Related Fields] by Dr. Herbert P. Fidler, 3rd edition 1989) that polyethylene glycol-9 nonyl phenyl ether is used as a spermicide. There are already known sponge carriers that are coated and/or impregnated with polyethylene glycol-9 nonyl phenyl ether.

The object of the present invention is to improve the spermicidal effect while also improving the disease resistance of the vaginal mucosa.

The object of this invention is achieved by the features in the characterizing part of Claim 1. It is advantageous that through the use of polyethylene glycol-9 nonyl phenyl ether in liquid form, it is easy to obtain an adhering coating which can be considered a synthetic chemical condom. This creates a protective function, e.g., in the case of the male penis, to prevent infection with microorganisms such as viruses, bacteria, Chlamydia and others such as the herpes simplex virus. If a foam vehicle or a traditional tampon is wetted, coated or filled with this substance, for example, then by inserting the foam vehicle with this agent in liquid form into the vagina, i.e., the posterior fornix, also known as the vault of the vagina, the liquid environment of the mucus membrane will absorb and distribute this agent more rapidly, so there will be a more rapid onset of effect over a larger surface area.

An embodiment according to Claim 2 is also advantageous because this additionally potentiates the environment responsible for the efficacy of the polyethylene glycol-9 nonyl phenyl ether through the pH, which is triggered by lactic acid.

The mixture according to Claim 3 promotes the establishment of the natural vaginal bacterial floral.

The efficacy of the agent is promoted by an embodiment according to Claim 4.

The other embodiment according Claim 5 also allows the various ingredients to become effective immediately after insertion of the vehicle, so that the advantageous protective effect begins immediately after insertion of the vehicle into the vagina.

An embodiment according to Claim 6 is advantageous because the high elasticity and the materials used permit good tolerance by the mucus membranes.

The embodiment according to Claim 7 prevents irritation of the vaginal mucosa.

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The advantageous embodiment according to Claim 8 permits an enormous increase in surface area which is advantageous for the exchange of fluids in the vaginal area, which can increase the duration of effect and potentiate the efficacy of active ingredients introduced there.

However, a use according to Claim 9 is also advantageous because by using the vehicle, multiple effects thereof can be achieved vaginally.

Furthermore, an application according to Claim 10 is advantageous because by inserting the vehicle into the posterior fornix, it is possible to shorten the vagina and achieve a mechanical closure of the cervical canal. In addition, a tamponade of the posterior fornix is achieved, and other active ingredients, in particular those of medical hygiene and lubricants can be [introduced] easily.

Finally however a use according to Claim 11 is possible, whereby lengthy storage and universal use in different areas can be achieved either for direct application to the penis or the vaginal mucosa or to the vehicle or tampons.

For a better understanding of this invention, it is experienced in greater detail below on the basis of the exemplary embodiments depicted in the drawings, which show:

Figure 1 a penis with a coating of polyethylene glycol-9 nonyl phenyl ether according to this invention;

Figure 2 a sponge vehicle which is wetted and/or coated and/or filled with the polyethylene glycol-9 nonyl phenyl ether according to this invention;

Figure 3 a sponge vehicle in its position inserted into the posterior fornix of the vagina.

Figure 1 shows a penis 1 with a coating 2 of a liquid which has a high viscosity and/or is in the form of a pate containing polyethylene glycol-9 nonyl phenyl ether 3. If the polyethylene glycol-9 nonyl phenyl ether 3 is mixed with 2 mL lactic acid 4, the natural bacterial flora is supported, i.e., improved.

For a complete and uniform coating having a high adhesion, a mixture of 8 mL polyethylene glycol-9 nonyl phenyl ether 3 is preferably used.

The lactic acid 4 creates a favorable environment for the surrounding mucus membrane 5 for the action of the polyethylene glycol-9 nonyl phenyl ether 3, in particular a favorable pH which facilitates the creation of a continuous coating 2 and prevents it from dissolving too rapidly due to great differences in pH.

However, as also apparent in Figures 2 and 3, the polyethylene glycol-9 nonyl phenyl ether 3 may also be dispensed through a mediating agent, e.g., a vehicle 6, onto the mucus membranes, e.g., the vaginal mucosa 7, 8. Then the polyethylene glycol-9 nonyl phenyl ether 3 acts as a contraceptive and virustatic.

The vehicle 6 is usually a plastic foam 9 with primarily open cells 10.

The application of polyethylene glycol-9 nonyl phenyl ether 3 to the vaginal mucosa 7, 8 can then take place by either coating the vehicle 6 with polyethylene glycol-9 nonyl phenyl ether 3 or a mixture containing it on an external surface 11 so that a continuous coating 2 is also formed over the entire surface 11 of the vehicle 6.

Additionally or independently thereof, it is also possible to fill the vehicle 6 with this agent and/or a mixture of this agent, namely polyethylene glycol-9 nonyl phenyl ether 3, as indicated schematically in part of the front view of the vehicle 6 in Figure 2.

However, this coating and/or wetting may also be performed in such a way that the entire surface area of the open cells and/or the cell structure is coated with this agent and/or a mixture containing this agent, as shown in another area of the front view of the vehicle 6 in Figure 2.

The synthetic foam is preferably formulated to have a high elasticity, and requires an indentation force of only about 20-80 N at a depth of penetration of 40%.

Preferably one cubic centimeter of the vehicle 6 and/or the elastic soft foam vehicle 6 is coated and/or impregnated with 3 mL/mg to 50 mL/mg of the polyethylene glycol-9 nonyl phenyl ether solution and/or a mixture containing same.

The synthetic foam 9 of the vehicle 6 is preferably made of a polyurethane prepolymer 12.

The density of this synthetic foam 9 is preferably less than 8 kg/m^3, and the synthetic foam 9 is preferably mainly formulated to be open celled.

Furthermore, it is also possible to additionally coat and/or fill the vehicle 6 with a lubricant 13 or other active ingredients 14. This achieves in an advantageous manner a combination of an improved lubrication effect, an improved disinfection effect and an improved cohabitation effect when using a vehicle 6, e.g., a tampon made of any materials.

The advantage of inserting the vehicle 6 into the vagina 15 is that this results in shortening of the vagina 15 and produces a mechanical closure of the cervical canal. This shortening of the vagina 15 with the vehicle 6 inserted also results in increased pleasure for the user in sexual intercourse. In addition, this forms a tamponade of the posterior fornix 16 which also has a positive effect on the distribution of the active ingredient and/or mixture of active ingredients, namely polyethylene glycol-9 nonyl phenyl ether 3.

However, it is of course also possible to apply the polyethylene glycol-9 nonyl phenyl ether solution and/or any mixture with this solution by means of a propellant gas under pressure in a stream of air so it is finely distributed on the penis 1 or the mucus membrane 5 or the vaginal mucosa 7, 8 of the vagina 15.

Due to the fine dispersion of the solution and/or mixture, a uniform continuous protective layer is formed, permitting a continuous shielding against external influences, in particular infections with microorganisms. When a mixture of polyethylene glycol-9 nonyl phenyl ether with lactic acid 4 is used, a high efficacy is achieved by expelling this mixture through the nozzle under high pressure with air and the resulting fine dispersion.

Polyethylene glycol-9 nonyl phenyl ether 3 (Nonoxynol) is usually a colorless liquid which is soluble in water, ethanol, ethylene glycol, ethylene dichloride, xylene, corn oil. It has the general formula H_3C-$(CH_2)_8$-C_6H_4-O-$(CH_2$-$CH_2O)$-X-1-CH_2-CH_2OH. When applied vaginally, this agent has a strong spermicidal effect on human sperm.

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List of Reference Notation

1	penis
2	coating
3	polyethylene glycol-9 nonyl phenyl ether
4	lactic acid
5	mucous membranes
6	vehicle
7	vaginal mucosa
8	vaginal mucosa
9	synthetic foam
10	cell
11	surface
12	polyurethane prepolymer
13	lubricant
14	active ingredient
15	vagina
16	fornix

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Patent Claims

1. Use of polyethylene glycol-9 nonyl phenyl ether in liquid form to produce a long-lasting wetting and/or coating of the mucus membranes of a reproductive organ to produce a chemical coating thereon or for wetting and/or coating and/or filling a vaginally insertable sponge vehicle as a contraceptive and virustatic agent for the vaginal mucosa.

2. Use according to Claim 1, characterized in that polyethylene glycol-9 nonyl phenyl ether (3) is mixed with 2 mL lactic acid (4).

3. Use according to Claim 1 or 2, characterized in that 8 mL polyethylene glycol-9 nonyl phenyl ether (3) is mixed with 2 mL lactic acid (4).

4. Use according to one or more of the preceding claims, characterized in that 1 cm^3 of the sponge vehicle (6) is coated and/or impregnated with 3 mL/mg to 5 mL/mg of the polyethylene glycol-9 nonyl phenyl ether solution.

5. Use according to one or more of the preceding claims, characterized in that the vehicle (6) impregnated with liquid polyethylene glycol-9 nonyl phenyl ether (3) is placed in an airtight package.

6. Use according to one or more of the preceding claims, characterized in that the sponge vehicle (6) is formed by a polyurethane prepolymer (12).

7. Use according to one or more of the preceding claims, characterized in that the density of the sponge vehicle (6) is less than 8 kg/m^3.

8. Use according to one or more of the preceding claims, characterized in that the vehicle (6) is mainly open celled.

9. Use according to one or more of the preceding claims, characterized in that the vehicle (6) is coated and/or filled with a lubricant (13) and/or active ingredients (14), in particular those of medical hygiene.

10. Use according to one or more of the preceding claims, characterized in that the vehicle (6) is designed for insertion into the posterior fornix (16).

11. Use according to one or more of the preceding claims, characterized in that the polyethylene glycol-9 nonyl phenyl ether (3) and/or a mixture thereof with lactic acid can be applied by distributing it through a gaseous propellant.

Fig.1

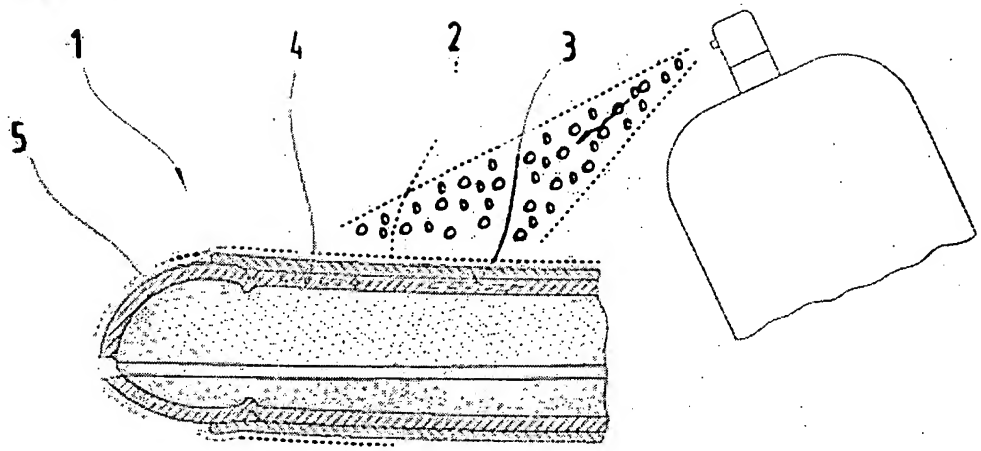
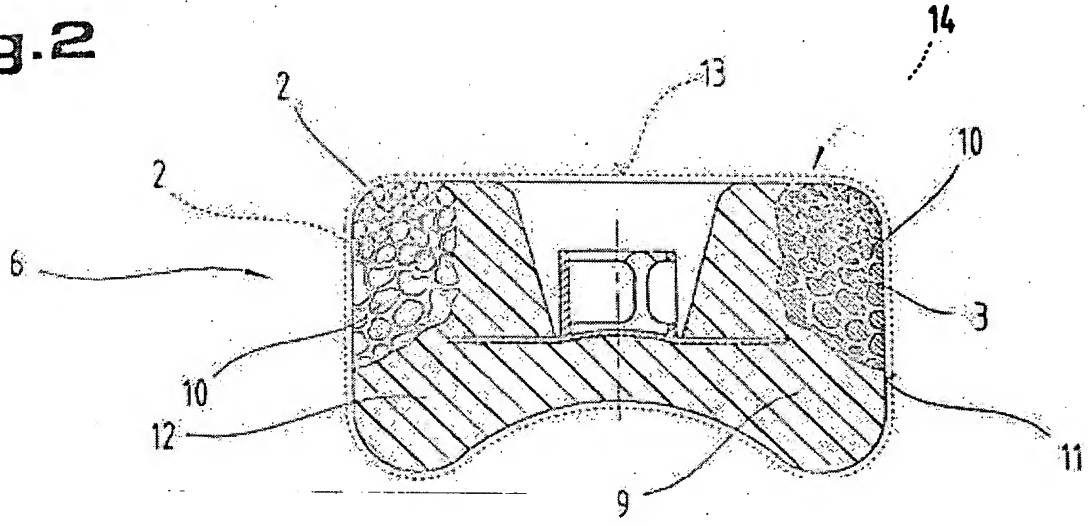


Fig.2



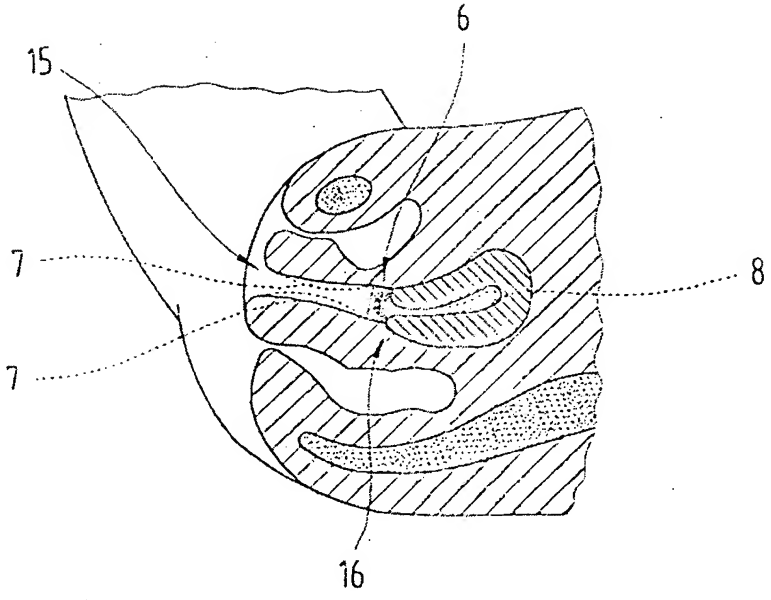


Fig.3

INTERNATIONAL SEARCH REPORT

Inter...onal Application No
PCT/AT 97/00233

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61K9/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 692 143 A (ILONA B. GERO) 8 September 1987 see the whole document	1-10
X	US 5 244 885 A (REINHOLD CARLE) 14 September 1993 see the whole document	1-3
X	DE 37 14 486 A (HEINY, BERND-MICHAEL) 10 November 1988 see the whole document	1,11
E	WO 97 45116 A (UNIROYAL CHEMICAL COMPANY) 4 December 1997 see claims 10,11,14-16 see page 10, line 14 - line 23 see page 11, line 19 - line 28 see page 12, line 10 - line 20	1

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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INTERNATIONAL SEARCH REPORT

Information on patent family members

Intel Application No
PCT/AT 97/00233

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4692143 A	08-09-87	US 4693705 A	15-09-87
US 5244885 A	14-09-93	DE 4200555 A	30-07-92
		EE 0496230 A	29-07-92
DE 3714486 A	10-11-88	CH 670953 A	31-07-89
WO 9745116 A	04-12-97	NONE	